

**ABSTRACT OF THE DISCLOSURE****SWITCHING POWER CONVERTER AND METHOD OF CONTROLLING OUTPUT  
VOLTAGE THEREOF USING PREDICTIVE SENSING OF MAGNETIC FLUX**

5        A switching power converter and method of controlling an  
output voltage thereof using predictive sensing of magnetic flux  
provides a low-cost switching power converter via primary-side  
control using a primary-side winding. The power converter has  
improved immunity to parasitic phenomena and other variations  
10    within the power converter components. An integrator is used to  
generate a voltage analog that represents magnetic flux within a  
power magnetic element via an integration of a voltage on a  
primary-side winding of the power magnetic element. A detection  
circuit detects the end of a half-cycle of post-conduction  
15    resonance that occurs in the power magnetic element subsequent  
to the energy level in the power magnetic element reaching zero.  
The voltage of the integrator is stored at the end of the post-  
conduction resonance half-cycle and is used to determine a  
sampling point prior to or equal to the start of post-conduction  
20    resonance in a subsequent switching cycle of the power converter  
(which is the predicted zero-energy storage point of the power  
magnetic element). The primary-side winding voltage is then  
sampled at the sampling point, providing an indication of the  
output voltage of the power converter. By predicting the zero-  
25    magnetic-energy storage point, the output voltage of a power

converter operating in discontinuous or boundary conduction mode can be accurately controlled without being affected by parasitic phenomena or variations in circuit performance over time, input voltage and temperature.